

Sequence Listing.txt

SEQUENCE LISTING

<110> THE HOSPITAL FOR SICK CHILDREN

<120> DIAGNOSIS OF SHWACHMAN-DIAMOND SYNDROME

<130> 3206-263/PAR

<140> PCT/CA03/01320

<141> 2003-08-29

<150> 60/406,950

<151> 2002-08-30

<160> 50

<170> PatentIn version 3.1

<210> 1

<211> 1604

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<223> human SBDS

<220>

<221> CDS

<222> (185)..(934)

<223>

Sequence Listing.txt

```

<400> 1
gtaagtaagc ctgccagaca cactgtgacg gctgcctgaa gctagttagt cgcggcgccg      60
cgccactgggt gttgggtcag tgccgcgcgc cgatcggtcg ttaccgcgag gcgctgggtg      120
ctttcaggct ggacggcgcg ggtcagccct ggctgcgccg cttctgggtc tttgaacagc      180
cgcg atg tgc atc ttc acc ccc acc aac cag atc cgc cta acc aat gtg      229
Met Ser Ile Phe Thr Pro Thr Asn Gln Ile Arg Leu Thr Asn Val
1 5 10 15

gcc gtg gta cgg atg aag cgt gcc ggg aag cgc ttc gaa atc gcc tgc      277
Ala Val Val Arg Met Lys Arg Ala Gly Lys Arg Phe Glu Ile Ala Cys
20 25 30

tac aaa aac aag gtc gtc ggc tgg cgg agc ggc gtg gaa aaa gac ctc      325
Tyr Lys Asn Lys Val Val Gly Trp Arg Ser Gly Val Glu Lys Asp Leu
35 40 45

gat gaa gtt ctg cag acc cac tca gtg ttt gta aat gtt tct aaa ggt      373
Asp Glu Val Leu Gln Thr His Ser Val Phe Val Asn Val Ser Lys Gly
50 55 60

cag gtt gcc aaa aag gaa gat ctc atc agt cgc ttt gga aca gat gac      421
Gln Val Ala Lys Lys Glu Asp Leu Ile Ser Ala Phe Gly Thr Asp Asp
65 70 75

caa act gaa atc tgt aag cag att ttg act aaa gga gaa gtt caa gta      469
Gln Thr Glu Ile Cys Lys Gln Ile Leu Thr Lys Gly Glu Val Gln Val
80 85 90

tca gat aaa gaa aga cac aca caa ctg gag cag atg ttt agg gac att      517
Ser Asp Lys Glu Arg His Thr Gln Leu Glu Gln Met Phe Arg Asp Ile
100 105 110

gca act att gtg gca gac aaa tgt gtg aat cct gaa aca aag aga cca      565
Ala Thr Ile Val Ala Asp Lys Cys Val Asn Pro Glu Thr Lys Arg Pro
115 120 125

tac acc gtg atc ctt att gag aga gcc atg aag gac atc cac tat tcg      613
Tyr Thr Val Ile Leu Ile Glu Arg Ala Met Lys Asp Ile His Tyr Ser
130 135 140

gtg aaa acc aac aag agt aca aaa cag cag gct ttg gaa gtg ata aag      661
Val Lys Thr Asn Lys Ser Thr Lys Gln Gln Ala Lys Glu Val Ile Lys
145 150 155

cag tta aaa gag aaa atg aag ata gaa cgt gct cac atg agg ctt cgg      709
Gln Leu Lys Glu Lys Met Lys Ile Glu Arg Ala His Met Arg Leu Arg
160 165 170 175

ttc atc ctt cca gtc aat gaa ggc aag aag ctg aaa gaa aag ctc aag      757
Phe Ile Leu Pro Val Asn Glu Gly Lys Lys Leu Lys Glu Lys Leu Lys
180 185 190 195

cca ctg atc aag gtc ata gaa agt gaa gat tat ggc caa cag tta gaa      805
Pro Leu Ile Lys Val Ile Glu Ser Glu Asp Tyr Gly Gln Gln Leu Glu
195 200 205

atc gta tgt ctg att gac ccg ggc tgc ttc cga gaa att gat gag cta      853
Ile Val Cys Leu Ile Asp Pro Gly Cys Phe Arg Glu Ile Asp Glu Leu
210 215 220

```

Sequence Listing.txt

ata aaa aag gaa act aaa ggc aaa ggt tct ttg gaa gta ctc aat ctg	901
Ile Lys Lys Glu Thr Lys Gly Lys Gly Ser Leu Glu Val Leu Asn Leu	
225 230 235	
aaa gat gta gaa gaa gga gat gag aaa ttt gaa tgacacccat caatctcttc	954
Lys Asp Val Glu Glu Gly Asp Glu Lys Phe Glu	
240 245 250	
acctctaaaa cactaaagtg ttccggttc cgacggcact gtttcatgtc tgtggctctgc	1014
caataacttg cttaaactat ttgacatttt ctactttgtg ttaacagtgg acacagcaag	1074
gctttcctac ataagtataa taatgtggga atgatttggg ttttaattata aactgggggc	1134
taaatcctaa agcaaaattg aaactccaag atgcaaagtc cagagtggca ttttgctact	1194
ctgtctcatg ccttgatagc ttccaaaat gaaagttact tgaggcagct ctttggggtg	1254
aaaagttatt tgtacagtag agtaagatta ttagggggtat gtctatacaa caaaaggggg	1314
ggtctttcct aaaaagaaa acatatgatg cttcatttct acttaatgga acttggtgtc	1374
tgagggtcat tatggtatcg taatgtaaag cttggatgat gttcctgatt atctgagaaa	1434
cagatataga aaaattgtgc cggacttacc ttctattgaa catgctgcca taacttagat	1494
tattcttggg taaaaataa aagtcactta ttctaattc ttaaagttta taatatatat	1554
taatatagct aaaattgtat gtaatcaata aaaccactct tatgtttatt	1604

<210> 2

<211> 250

<212> PRT

<213> Homo sapiens

<220>

<221> misc_feature

<223> human SBDS

<400> 2

Met Ser Ile Phe Thr Pro Thr Asn Gln Ile Arg Leu Thr Asn Val Ala
1 5 10 15

Val Val Arg Met Lys Arg Ala Gly Lys Arg Phe Glu Ile Ala Cys Tyr
20 25 30

Lys Asn Lys Val Val Gly Trp Arg Ser Gly Val Glu Lys Asp Leu Asp
35 40 45

Glu Val Leu Gln Thr His Ser Val Phe Val Asn Val Ser Lys Gly Gln

Sequence Listing.txt
60

50

55

Val Ala Lys Lys Glu Asp Leu Ile Ser Ala Phe Gly Thr Asp Asp Gln
65 70 75 80

Thr Glu Ile Cys Lys Gln Ile Leu Thr Lys Gly Glu Val Gln Val Ser
85 90 95

Asp Lys Glu Arg His Thr Gln Leu Glu Gln Met Phe Arg Asp Ile Ala
100 105 110

Thr Ile Val Ala Asp Lys Cys Val Asn Pro Glu Thr Lys Arg Pro Tyr
115 120 125

Thr Val Ile Leu Ile Glu Arg Ala Met Lys Asp Ile His Tyr Ser Val
130 135 140

Lys Thr Asn Lys Ser Thr Lys Gln Gln Ala Leu Glu Val Ile Lys Gln
145 150 155 160

Leu Lys Glu Lys Met Lys Ile Glu Arg Ala His Met Arg Leu Arg Phe
165 170 175

Ile Leu Pro Val Asn Glu Gly Lys Lys Leu Lys Glu Lys Leu Lys Pro
180 185 190

Leu Ile Lys Val Ile Glu Ser Glu Asp Tyr Gly Gln Gln Leu Glu Ile
195 200 205

Val Cys Leu Ile Asp Pro Gly Cys Phe Arg Glu Ile Asp Glu Leu Ile
210 215 220

Lys Lys Glu Thr Lys Gly Lys Gly Ser Leu Glu Val Leu Asn Leu Lys
225 230 235 240

Asp Val Glu Glu Gly Asp Glu Lys Phe Glu
245 250

<210> 3

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

Sequence Listing.txt

<223> primer
 <400> 3
 gcgtaaaaag ccacaatac 19

<210> 4
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 4
 ctatgacagt attcgtaaga ctagg 25

<210> 5
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 5
 ggggatttgt tgtgtcttg 19

<210> 6
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 6
 ctttcctcca gaaaaacagc 20

<210> 7
 <211> 20

Sequence Listing.txt

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 7

aaatggtaag gcaaatacgg

20

<210> 8

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 8

accaagttct ttattattag aagtgac

27

<210> 9

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 9

gctcaaacca ttacttacat attga

25

<210> 10

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

Sequence Listing.txt

```

<223> primer
<400> 10
cacttgcttc catgcaga
18

<210> 11
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 11
aaaggggcat tttaacactt c
21

<210> 12
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 12
gaaaatatct gacgtttaca aca
23

<210> 13
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 13
tccactgtag atgtgaacta actc
24

<210> 14
<211> 20

```

Sequence Listing.txt

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 14

cactctggac ttgcatctt

20

<210> 15

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 15

gcttctgctc cacctgac

18

<210> 16

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 16

agctatgctg cagctgttac

20

<210> 17

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

Sequence Listing.txt

```

<223> primer
<400> 17
atgcatgtcc aagtttcaag
20

<210> 18
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 18
tccatggcta tattttgatg a
21

<210> 19
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 19
taagcctgcc agacacac
18

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer
<400> 20
cactctggac ttgcatctt
20

<210> 21
<211> 19

```

Sequence Listing.txt

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 21
 tgttggtttt caccgaata 19

 <210> 22
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 22
 agataaagaa agacacacac aact 24

 <210> 23
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 23
 gaaatgcct gctacaaa 18

 <210> 24
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>

Sequence Listing.txt

<223> primer
 <400> 24
 tcagcttctt gccttcac 18

 <210> 25
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 25
 taagtaagcc tgccagaca 19

 <210> 26
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 26
 catcaaggct tttttccaag 20

 <210> 27
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer
 <400> 27
 cctgtctctg cccaagtc 18

 <210> 28
 <211> 21

Sequence Listing.txt

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 28

aggggaacatt ttcaaaactc a

21

<210> 29

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide

<400> 29

Ile Lys Lys Glu Thr Lys Gly Lys Gly Ser Leu Glu Val Leu Asn Leu
1 5 10 15

<210> 30

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> peptide

<400> 30

Cys Tyr Lys Asn Lys Val Val Gly Trp Arg Ser Gly Val Glu Lys Asp
1 5 10 15

<210> 31

<211> 20

<212> DNA

<213> Artificial Sequence

Sequence Listing.txt

<220>
 <223> primer
 <400> 31
 gccttcactt tcttcatagt 20

<210> 32
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 32
 gcttgcccta aaggaagtt 19

<210> 33
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 33
 cagccgacga ccttgtttt 19

<210> 34
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer
 <400> 34
 gtgccaacgc tgtgtttt 18

Sequence Listing.txt

<210> 35

<211> 719

<212> DNA

<213> Homo sapiens

<400> 35

```
gcgtaaaaag ccacaatacg caggcggtcat cgctcacttt tcccctcccg gcttctgctc      60
cacctgacgc ctgcgcagta agtaagcctg ccagacacac tgtgacggct gcctgaagct      120
agtgagtcgc ggcgccgcgc actggtggtt gggtcagtcg cgcgcgccga tcggtcggtta      180
ccgcgaggcg ctggtggcct tcaggctgga cggcgcgggg cagccctggt tcgccggcct      240
ctgggtcttt gaacagccgc gatgtcgatc ttacccccca ccaaccagat cgcctaacc      300
aatgtggcgg tggtagcgat gaagcgtgcc ggggaagcgt tcgaaatcgc ctgtctacaa      360
aacaaggctg tcggctggcg gagcggcgtg tgagtagccc cctccctcgg gcctgggcct      420
gggcctgagc cgtcacctcc gaggcggcct gtctctgccc aagtcgagtg aatgggccaag      480
gctggggtgt tggccgggga ggaatggaa cattctgctg gtgagcatga gacgtcgctg      540
tccgagcttg gcgcctaagc caagggtttc ttctttatct ggttggttcg gattgggttg      600
ttggtttggg gttttgtttt gttggtgtca taaaagctgc agccaagaaa ctctgtaatt      660
gtggtccttt tcctagaata atgatggctg agaacctagt cttacgaata ctgtcatag      719
```

<210> 36

<211> 733

<212> DNA

<213> Homo sapiens

<400> 36

```
aaatggtaa gcaataacgg ttctgagttt tgaaaatggt ccctcaggcc gatgcgggca      60
gttcacttga gggcaggagt tcgaggccag cctggccaac atgaaacccc atctctacta      120
aaaatacaaa gttagccggg tgtggtggcg catgcctgta atcccagtta ctcaggaggc      180
tgaggcggga gaatcacttg aaccggggag gctgaggtta cagtgaccgc agatcgcgcc      240
attgcactcc agcctgggca aaaacagtga aattccatct aggggcgggg gttggggggg      300
aagaaaaaga aaactgccct ctacactaaa ggtcatcagg gggatttggt gtgtcttgcc      360
gttcattgtt ttgccatctc gtatttaa atgtaaatgcat gtccaagttt caagtatatt      420
cacataggac tttctctcct gccctcaca gggaaaaaga cctcgatgaa gttctcgaga      480
```

Sequence Listing.txt

```

ccctactcagt gtttgaataa gtttctaaag gtcagggtgc caaaaaggaa gatctcatca 540
gtgcgttttg aacagatgac caaactgaaa tctgtaagca ggtgggtaac agctgcagca 600
tagctaacc taataaccat ttataacgta ttttagata tattaaacat taaaggctgt 660
ttttctggag gaaagactaa ccaagcaata atgtgaactg cacagtgtca ctcttaataa 720
taaagaactt ggt 733

```

<210> 37

<211> 899

<212> DNA

<213> Homo sapiens

```

<400> 37
gctcaaaaca ttacttacat attgatagct ggagaggatg aaatttaatt ttctctccat 60
ccagttactc attttttatg gttagttaat aaatagtgtg tgatagagaa agatagtgat 120
ttctttaaag tgttggcatt ttttttagatt ttgactaaag gagaagtcca agtatcagat 180
aaagaagac acacacaact ggagcagatg tttagggaca ttgcaactat tgtggcagac 240
aaatgtgtga atcctgaaac aaagagacca tacaccgtga tccttattga gagagccatg 300
aaggacatcc actattcgtg gaaaaccaac aagagtacaa aacagcagggt gagtggtttc 360
tcatgtcatc aaaatatagc catggaaatc agttttctct gaagaaatca ttaaaataat 420
gggtctgggg ccaggcacaa tggttcatgc ctgtaatcct agcactttgg gagccaagat 480
gggaggattg cttgaggcct ggaacagcc tgggaaacat agggacgccc catctctaaa 540
tttttttttt ttttttttga gacagagtct tactctattg cccaggctgg agtgcagtag 600
tatgatctcg gctcactaca atctccacct cccgcgttca agcaagtctc ctgcctcagc 660
ctcctgagta gctgggatta taggcacgtg ccaccacact cagctaattt tgtattttta 720
gtagagttda ggtttcacca tgttggccag gctggctctg aactcctgac cctaggtgat 780
ccgtccgcct tggcctccca aagtgtctggg attacaggca tcagctaccg taccctacct 840
ctaaattttt taatataaaa aattaaattt aaaaaaatgg gtctgcatgg aagcaagtg 899

```

<210> 38

<211> 1488

<212> DNA

<213> Homo sapiens

Sequence Listing.txt

```

<400> 38
aaagggtcat tttaacactt ctttttgaat tttttaattt atatataatt cacataccat 60
aaatttcaca ctcataaagt atgtacactt taagtggat attaacaag ttttgaacc 120
ttccctgcta cctggttcga gaacattttc atcaccacaa aaagaaagtc agtatccatt 180
agtagccatc ccccattttc cccccacagg cccctcccaa ccactaatct cctctcgta 240
tggacttctc aattctggac atttcatata aatggaatca tacaatatgt ggccttttca 300
tggttcatat atgtgttaac ctgcatcagc atgtcatttc ttttttatgc cggaataata 360
gccactgta cggaaagaaa cacattttgt tcattcatct atcagttgat agacattggg 420
ttgctttcac ttttgagcta tgatgagcaa tgcgtctata aaatttcttg tatgtttctg 480
tgtagacata tgttttcatt tctgtatacc tggtgactac caaacctatt tctaaaacag 540
ctgcaccatt ttactttacc accatcagtg ttttaagagtt cagtttctcc acatcctcag 600
taatacttgt cattgtctgc ctttttgatg atggccatcc tgggtgtatc ttgtcgtggt 660
tttgatttgc atttctctaa tgatgatttg agcatatttc catgtgctta ttggtgcctc 720
gtctgtcttc ttttgagaaa tctctgttca ggttctttgc ccaccccccc cgcctcttt 780
ttgcaaaact tgctctcccg attcaagcaa ttctcctgcc tcagcctctt gactagctgg 840
gattacaggc gtgcaactac acaccggct aatttttctt tttttgtatt ttttagtgag 900
acgggggttc accatgttgg ccaggctggc ctcgaattcc tgaccttggt atgcacccgc 960
ctcggcctcc caaagtgtcg gaattacagg cgtgagccac cacacctggc cttcactttc 1020
ttcatagttt tttgaaacac aaaagctttt cttcttgata agtccaattt ttctattttt 1080
tttttaacgg tcacttatgt tcttaatgtt atacctaga aaccattacc taatccaact 1140
acatggaaac tactttgttt ttgaaaacct tatgaaataa tatagtagaa gaaattgcat 1200
tctcgatttt gtcttggtag gctttggaag tgataaaagca gttaaaagag aaaattgaaga 1260
tagaacgtgc tcacatcagg cttcggttca tccttccagt caatgaaggc aagaagctga 1320
aagaaaagct caagccactg atcaagggtc tagaaaagta agattatggc caacagttag 1380
aaatcgtaag agtcaaatat tttctttgct tcattgttacc taaatatgtt atttctctagt 1440
ataaattttg tagcaaacat ttatagtttg taaacgtcag atattttt 1488

```

<210> 39

<211> 1556

<212> DNA

<213> Homo sapiens

Sequence Listing.txt

```

<400> 39
tccactgtag atgtgaacta actcatctga cactacttga agttctaaaa tctttgcaaa 60
actgtacaca tggggccaggc acagtggctc gtgcctgtaa tcccagcact ttgggaggcc 120
aagggtgagca gataacatgg tgaaacctta tcttacttaa aaatacaaaa aataagccag 180
gtgtggtggt ggggttcctgt aatcccagtt tcttgggagg ctgaggcagg agaatacatt 240
gaacctggga ggcggaggct gcagtga gcc aagatcacac cactgcactc tatctcaaaa 300
aaaaataaat taacatacac atggtgtcta cataagtctt cacattgctt tttctccttc 360
atacgtggag gtgactttac tgagctataa aatgtaatgc taaattttag tatgagaaga 420
atcagagttt tctagtttgt ccttccatt tacagctgaa gaatcagaat aagtgtttaa 480
acatagggat taatgccttg tcacaggggg ctacatggac acttgagggc agaggctaaa 540
ctggaacca gtgtgccgcc ctaccattg tcttatctat tgcaccatag aactgtggta 600
ttattagaga tctggacagc attgtgcttg cctcaaagga agttaaagct gagtttattc 660
tgtgtcttgc tcactctcat gtggtaatct gctacgttaa atgtttcagg tatgtctgat 720
tgacccgggc tgcttcctgag aaattgatga gctaataaaa aaggaaaacta aaggcaaagg 780
ttctttggaa gtactcaatc tgaaagatgt agaagaagga gatgagaaat ttgaatgaca 840
cccatcaatc tcttccactc taaaacacta aagtgtttcc gtttccgacg gcactgtttc 900
atgtctgtgg tctgccaaat acttgcttaa actatttgac attttctatc tttgtgttaa 960
cagtggacac agcaaggctt tcctacataa gtataataat gtgggaatga tttggtttta 1020
attataaact ggggtctaaa tcctaaagca aaattgaaac tccaagatgc aaagtccaga 1080
gtggcatttt gctactctgt ctcatgcctt gatagctttc caaaatgaaa gttacttgag 1140
gcagctcttg tgggtgaaaa gttatttgta cagtagagta agattattag gggatgtct 1200
atacaacaaa aggggggggtc tttctaaaaa aagaaaacat atgatgttc atttctactt 1260
aatggaactt gtgttctgag ggtcattatg gtatcgtaat gtaagcttg gatgatgttc 1320
ctgattatct gagaacaga tatagaaaaa ttgtgccgga cttacctttc attgaacatg 1380
ctgccataac ttgattattt cttggttaaa aaataaaagt cacttatttc taattcttaa 1440
agtttataat atatatattt atagctaaaa ttgtatgtaa tcaataaaac cactcttatg 1500
tttattaaac tatggcttgt gtttctagac aacttcttaa ctccctttct tttctc 1556

```

<210> 40

<211> 720

<212> DNA

<213> Homo sapiens

Sequence Listing.txt

```

<400> 40
gcggtaaaag ccacaatgcg caggcgctcat cgctcacttc tccccctccg gcttctgctc 60
cacctgacgc ctgctgcagta agtaagcctg ccagacacgc tgtggcggct gcctgaagct 120
agtgagtcgc ggcgcgcgcg acttgtggtt gggctcagtc cgcgcgccgc tcggtcggtta 180
ccgcgaggcg ctggtggcct tcaggctgga cggcgcgggg cagccctggt ttgctggcctt 240
ctgggtcctt gaacagccgc gatgtcgatc ttcaccccca ccaaccagat ccgcctaacc 300
aatgtggcgg tggtagcgat gaagcgcgcc aggaagcgct tcgaaatcgc ctgctacaga 360
aacaaggctg tcggctggcg gagcggcttg tgagtagccc cctccctcgg gcctgggcct 420
gggcctgagc cgtcacctcc gaggcggcct gtctctgccc aagtcgagtg aatgggcccag 480
gctgggtgtg ttgttggccc gggaggaaat ggaacatttc tgctgtgagc atgagacgct 540
gctgtccgag cttggcgccct aagccaaggg tttctttatt tgggtgtgtc cgattgggtt 600
gttgggtttg ggtttttgtt tgttggtgtc ataaaagctg cagccaagaa atctcataat 660
tgtggtcctt ttcctagaat aatgatggct gagaacctag tgttccgaat actgtcatag 720

```

<210> 41

<211> 722

<212> DNA

<213> Homo sapiens

```

<400> 41
aaatggtagg gcaaatacag ttctgagttt tgaaaatggt ccctcaggcc gatgcgggca 60
gatcacttga ggccaggagt tcgaggccag cctggccaac atgaaacacc atctctacta 120
aaaatacaaa attagccggg tgtggtggcg catgcctgta atcccagcta ctcaggaggc 180
tgaggcagga gaatcacttg aaccggggag gcgcagcttg cagtgcgccc agatcgcgcc 240
attgcactcc agcctgggca aaaacagtga aattccatct aagggcgggg gggggaagaa 300
aactgccctc tacactaaag gtcatcaggg ggatttgttg tgtcttgccc ttcatttgtt 360
tgccatctcg tatttaaagt taaatgcagt tccaagtttc aagtatatcc acataggact 420
ttctctcctg ccctcaCaag ggaaaaagac cttgatgaag ttctgcagac cactcagtg 480
tttgtaaatg tttcctaagg tcaggttgcc aagaaggaag atctcatcac tgcgtttgga 540
acagatgacc aaactgaaat ctgtaagcag gcgggtaaca gctgcagcat agctaaccct 600
aataaccatt tataacgtat ttgtagatat attaaacatt aaaggctggt tttctggagg 660
aaagactaac caagcaataa tgtgaactgc acaatatcac ttctaataat aaagaacttg 720
gt 722

```

Sequence Listing.txt

<210> 42

<211> 904

<212> DNA

<213> Homo sapiens

<400> 42

```
gctcaaacca ttacttacat attaatagct ggagaggatg aaatttaatt tctccccag      60
ttactcattt tttgtcgtta gttaataaat agtgtgtgat agagaaagat agtgatttct    120
taactgtgtt ggcatttttt tagattttga cttaaaggaga agttcaagta tcagataaag      180
acacacacaa ctggagcaga tgtttaggga cattgcaatt attgtggcag acaaatgtgt      240
gactcctgaa acaaaagagac catacaccgt gatccttatt gagagagcca tgaaggacat      300
ccactatttg gtgaaaacca acaggagtac aaaacagcag gtgagtgggtc tctcatgtca      360
tcaaataata gccatggaaa tcagttttct ctgaagaaat cattaaaata atgggtctgg      420
ggccaggcac aatggttcat acccgtaatc ctagcacttt gggagccaag atgggaggat      480
tgcttgaggc ctggaacacg cctgggaaac atagggacgc cccatctcta aatttttttg      540
tttattgttg ttttttggtt tgagacagag tcgactgtgt ttgccaggc  tggagtgcag      600
tggcacgata tcggctcact tacaatctcc acctcccgcg ttcaagcaag tctcctgcct      660
cagcctccca agtagctggg attataggca cgcgccacca caccagcta attttggat      720
ttttagtaga gttgaggttt taccatgttg gccaggctgg tcttgaactc ctgacctcag      780
gtgatccgtc cgccttggcc tcccaaagtg ctgggattac aggcatacgc taccgtacc      840
tacctctaata ttttttaata taaaaaatta aatttaaaaa aatgggtttg catggaagca      900
agtg                                             904
```

<210> 43

<211> 1527

<212> DNA

<213> Homo sapiens

<400> 43

```
aaagggtcat tttaacacct ctttttgaat ttttcaattt acatataatt cacatacaat      60
aaatttcaca ctCataaaagt gtgtacactt taagtggat attaacaag tttgggaacc      120
ttccctgcta cctggtttga gaacattttc atcaccacaa aaagaaagtc agtatccatt      180
```

Sequence Listing.txt

```

agtagctatc cccattttc cccccacagg ccttcccaa ccaactaatct cctgtcgtta 240
tggacttgtc aattctggac atttcatata aatggaatca tacaatatat ggccttttca 300
gggttcatac atgttgtaac ctgcatcagc atgtcatttc ttttttatgc cggaataata 360
gccactgta cggaaaaaaa catattttgt tcattcattt atcagttgat agacattggg 420
ttgctttcac ttttgagcta tgatgagcaa tgcctgtata aaatttcttg tatgtttttg 480
tgtagacata tattttcatt tctgtatacc tggggactac caaacctatt tctaaaacag 540
ctgcaccatt ttacattacc accaacagcg tttaagagtt cagtttctcc acatcctcag 600
taatacttgt cattgtctgt ctttttgatg atggccatcc tgggtggtatc ttgtcgtcgt 660
tttgatttgc atttcttaa taatgatttg agcatatttc catgtgctta ttggtgcctc 720
gtctgtctgc ttttgagaaa tctctgttca ggttctttgc ccccttttta ttctcgtctc 780
gtcaccaga ctagagtgc gtggcgcgat ctgcgctcat tgcaaactct gcctcccga 840
ttcaagcaat tctcctgcct cagcctcttg agtagctggt actacaggcg tgtgctacca 900
caccgggcta atttttcttt ttttgtattt ttagtagaga cggggtttca ccatgttggc 960
caggctggtc tcgaatttct gacctgtga tgcacccgcc tcgcctccc aaagtgtcgg 1020
gattagaggc gtgagccacc acacctggcc ttcactttct tcataatttt ttgaaacaca 1080
aaagcttttc ttcttgataa gtccaatttt tctatttttt ttaacggtc acttatgttc 1140
ttaatgttat acctaagaaa ccattaccta atccaaactac atggaaacta cttgttttt 1200
gaaaacctta tgaaataata tagtagaaga aattgcattc tcgattttgt cttgttaggc 1260
tttgaagtg ataaagcagt taaaagagaa aatgaagata gaacgtgctc acatgaggct 1320
tcagttcatc cttccagtga atgaaggcaa gaagctgaaa gaaaagctca agccactgat 1380
caaggtcata gaaagtaag attatggcca acagttagaa atcgtaagag tcaaatattt 1440
tctttgcttc atgttaccta aatattgtat tctctagtaa taaatttgta gcaaacattc 1500
agacattgta aacagtcaga tattttc 1527

```

<210> 44

<211> 1553

<212> DNA

<213> Homo sapiens

<400> 44

```

tccactgtag atgtgaacta acccatctga cactacttga agttctaaaa tctttgcaaa 60
actgtacagc tggggcaggc acagtggctc atacctgtaa tccagcact ttgggaggcc 120
gaggcgagca gataacacgg tgaaacctg tctctactaa aaatacaaaa aataagccag 180

```

Sequence Listing.txt

```

gtgtggtggt gggcgctctgt aatcccagtg tcttgggagg ccgaggcagg agaatacatt 240
gaacctggga ggtggaggct gcagtgcagcc aagatcacac cactgcactc tatctcaaaa 300
aaaaaataaa acaaaaacat acacatggtg tctacgtaag tcttcacatt gctttttctc 360
cttcatacgt ggagggtgact ttactgcagc ataaaaatgta atgctaaatt ttagtatgag 420
aagaatcaga gttttctagt ttgtcccttc catttacagc ggaagaatca gaataagtg 480
ttaaacatag ggattaatgc cttgtcacag ggggctacat ggatacttga gggcagaggc 540
tgaactggaa cccagtgctg cgccttacc attgtcttat ctattgcacc atagaactgt 600
ggtattagag atctggacag cattgtgctt gcctcaaagt taaagctgag tttattctgt 660
gtcttgctca tcctcatttg gtaaaactgct acgttaaatt ttccaggat gtctgattga 720
cctgggctgc ttccgagaaa ttgatgagct aataaaaaag gaaaccaaag gcaaaggctc 780
tttggagata ctcaatctga aagatttgaa gaaggagatg agaaatttga atgacacca 840
tcagtctctt cacctctaaa acactaaaagt gttttcgttt ccaacagcac tgtttcatgt 900
ctgtggtctg ccaaaacttt gctcaaaacta ttgacattt tctatctttg tgtaaacagt 960
ggacacagca aggcctttct acataagtat aataatgtgg gaatgatttg gttttaatta 1020
taaaactggg tctaatactt aaagcaaaat tgaaaactca ggaatgcaaaa tccagagtgg 1080
cattttgcta ctctgtctca tgccttgata gctttccaaa atgaaagtta cttgaggcag 1140
ctcttgctgg tgaagaagttt ttgtacagt agagtaagat tattaggggt atgtctatac 1200
gacaaaaggg gggcttttcc taaaaaagaa aacatgatgc ttcatttcta cttaatggaa 1260
cttgtgttct gagggctatt atggtatcgt aatataaagc ttggatgatg ttcctgatta 1320
tctgagaaac agatatagaa aaattgtgtc ggacttaaat aattttcgtt gaacatgctg 1380
ccataactta gattattctt ggttaaaaaa taaaagtcac ttatttctaa tctctaaagt 1440
ttataatata tattaatata gctaaaattg tatgtaatca ataaaaccac tcttatgttt 1500
attaaactat ggcttgtgtt tctagacaac ttccctaact cctttctttt ctc 1553

```

<210> 45

<211> 723

<212> DNA

<213> *Mus musculus*

<400> 45

```

aacgaccgc cttcctttga ggtgcctggg tggaactaga gggcgtaaaa agtcacggcg 60
cgcaggcgtg gttgctttct tatcggccta gtgcgccact tgacgcctgt gcagtagggc 120

```

Sequence Listing.txt

```

aatcgggcgt gcggtagctt ctccctgggt aggttccgga agagccgcgc actccttggg 180
cgtaaagggt tcgcgcgccg cagggtcgtt tcagccgagc acttggcgtc ccctcgagct 240
cgagatctgt gaacagccac catgtcgatc ttcaccccca ccaaccagat ccgactgacc 300
aatgtggccg tgggtcggat gaagcgggga ggaagcgcgt tcgaaatcgc ctgtataaaa 360
aacaaggctg tcgggtggcg gagtggcgtg tgagtaatcc tgtgccaga gttcggcggc 420
ctggcctccc taacccggcg tcctgcgacc catcgggtacc tttaggcctt ggtttacccg 480
attcggattg ggttctgctt tgggattttg ttagtatcat aaaaactgcc aactacaaac 540
gccatcagag ccgggtggga ccgatggttt aggcctgtaa tccagcgcc caggaaactg 600
aggcaggagg attgctgcga ttccaggcc agcctggaac gtgtgtgtgt gtgtatgtgt 660
atgtgtgtgt tgtgtgtgtg tatgtgtatg tgtgtgtgag agagaccgtg accgaccctg 720
tac 723

```

<210> 46

<211> 733

<212> DNA

<213> Mus musculus

<400> 46

```

gtagtgtctt cgctactgcc atctagggac agatattcca ggacagaaga aacaccactc 60
ccccaccac cctgagtttc ctacataaaa acaatgatgt agtttttccc tctgtggtga 120
agtgggagaa tccagatact gtccttcgca ggtagccacc agagagagag tgtgtgtgtgt 180
gtgtgtgtga gatttctctt ttttttttct tttagggttt ttgttttgtt tttttttgtt 240
ttgtttggtt tttttttttt ttttttttga gactggcctc aaactcccaa tttccctgcc 300
tctgcctcct aaatggtgag ttacagatgt gcacatcaca ccagcttgc agcacttgcc 360
atttctcttg ttgtatctt gtgtttaa atgtgagtgat tttcttacta tccagtgga 420
cacataggac tttctctcct gccctttcaa gggaaaaaga cttgatgaa gttctgcaga 480
cccatcagtg gtttgtaaat gtttccaaag gtcagggtgc caagaaggaa gacctcatca 540
gtgcatttgg gacagacgac cagactgaaa tctgcaagca ggtaggctct gccaggtgca 600
atgtaacaaa atctcacgat ggtaggcaac atctggacca ctgtgtttac tgtttttctt 660
gatgagtttt tgtgttttta gcatttggtt ggtccctccc acctccagtt tatattgttg 720
ggcaatttgg gga 733

```

<210> 47

Sequence Listing.txt

<211> 912

<212> DNA

<213> Mus musculus

<400> 47

tgtaagctgc tgcctgggtta aggcagcacg tggttctgcg tgagcagctg cagtggacgc	60
cgctccctt cctccccgct acctacctgt gcagtagaga gatacccaga actgatgagg	120
gctttctcta tgttctgcc a tctttagatt ttgactaaag gagaagttca agtgcagat	180
aaagaacggc acacacagct ggagcagatg tttagggata tcgccaccat tgtggcagac	240
aagtgtgtga acccagaaac aaagagacct tacaccgtta tcctcatcga gagagccatg	300
aaggacatcc actactccgt gaaacccaac aagagcaca agcaacaggt aagggttcct	360
tgtgtgcctc gggacctaa g ccatggaag tgcctgatgc gcctgcctcc ctatctctgg	420
tgcctgggtc agcagcacac acttccaggc tgcctggctg tgctgggtct catcattctg	480
agcagaccct ctcccggctg agccataccc ttactgctg ctccctcagtg tgacggaaca	540
caatacaca cagaactctt tttgtttgtt tgtttgtttt ggggtttttt ttttttttt	600
ttagttttgt ttttggctct tcgagacagg gtttctctgt attgccctgg ctgctcctgga	660
actcgtctg tagccaggc tggcctcgaa ctacagaaatc cgctgcctc tgcctcccaa	720
gtgctgggat taaaggcgtg ggccaccaca cctggtctat acagaactct tatttcctgc	780
ccagctcaaa cctttaaaga gaaagcttg actttgagtc acctgagccc ttttgcgtgt	840
tgtgtttatt aacatatctc ctacagctca gcctgtcac gccagccatt ctgctggcct	900
gattccaag ca	912

<210> 48

<211> 1528

<212> DNA

<213> Mus musculus

<400> 48

ctcaaaagaa ataacaagtc gggttggtg gtgcacacct ttaatccag cactcgggag	60
gcagaggcag gcgaatttct gaggttggagg ccagcctgag ttccaggaca gccagggcta	120
tacagagaaa cctgtctcg aaaaaccaa aaaaaaaaaa aaaaaaaaaa aagaagggaag	180
aaagaagaa agcaagcaag caagcaagcg agcaatggtg ttccacagca cgaagtatag	240
tatgacccat ataactaaca gcctgcctga gttattactg cttaggcagt ggcctgactt	300

Sequence Listing.txt

```

agacctgac atgtacgtcc agaaaaggcc tgggggaaaa ctggaaggag ccagagaaga 360
acctccatac acaagaactc tgggcaacct cagaactact catgtccatt ccacaacca 420
accaggggct tctctgtaca gggacaagc acaggagagt catcaagga ctaacgagct 480
cacatcgacc acctgtgcac tgttccccct tccataaacc tcagattgca caagctcagc 540
ccccgtctcc tccacatcca gctgccagtg actgacgctg cctgcgggtc agtggcagag 600
gtgccaaggc aaaggcctgt gaggacctta ctgtgtatca ctaggcgtcc cagcactctg 660
gatgactgtt attagacttt cagggaagcc actagtctct ctaccagtg acagcttctc 720
aggcacgggt gtccacagag tgggaagggc ctgtctggac ggctggtggg aagctctggg 780
ccattttccc aaggagcatg tctctgctct caccactgtt agaattactg tgaactcagc 840
tatgggctca ggtcctcaag gttcatggct taaaacaggg ttgcttaga agtctccgag 900
gccaacaaaa agacattttg tctgttctag agatgtacga aattcccacc gcacacattt 960
tcttgctttt agagagctga ggacagccca ggtcctcgtg catgctgggt agttgtctta 1020
ccactgaact gagtcccagc ctttaacgtt gctttctgcc gaagcaaaaa ttattttttt 1080
ttccatttca caaaatgaga cactagctca ttttttaggt atttctagga ttgctggtag 1140
cttggtctga aaactgtcgg cataaggcag ctatgtggaa actgctttgt tcatgtctaa 1200
catataaatt tgtgcagcac aaaaactaag taacgagcac ccctgttct gtcttaagg 1260
ctttggaagt gataaagcag ctgaaagaga agatgaagat agagcgggcc cacatgcgat 1320
tgcgcttcat cctgccagtg aacgaaggga agaagctgaa ggagaagctg aagccactga 1380
tgaagggtgt ggagagttag gactacagcc agcagctgga gatcgtaaga tgatggtggc 1440
ggggagcagg tggcgagcc aaggtcccat gattatgacc ttaacacatt attattcttg 1500
gcttccttct acccaaatag cctcgttc 1528

```

<210> 49

<211> 1440

<212> DNA

<213> Mus musculus

<400> 49

```

gtatactgtg gctgtcttca gacacagcag aaggcatcgg atcccattac agatggttgt 60
gagccacttg tggttgtcgg gaattgagct cagaacctct ggaagagcag ccagtgtgta 120
gcatctctac agcctctgaa cccgggtctt gatgctaagc agtgctcact ctcatgtatga 180
gctgcagcac tggccagggt agtcttcaag ggtgtcttaa tcaggctttt actgctgtga 240
acagacacca ggaccaatgc aagtcttata aagaacaaca tttagttgag tctggcttac 300

```

Sequence Listing.txt

agggttcagag gttcagtcga ttatcaagggt gggagcatgg tagtatccag gtgggaatga	360
tacaggaggg gctgagagtt cgacatcttc atctgaaggc tgctagcaga atactgactt	420
cgaggctgtt aggatgaggg tcttaaaagcc tatgaccaca gggacacacc ttctaatagt	480
gtcactcccc gggctgagca tatacaaacc gtaacacggg ataagtgcct ttcccaaagt	540
ccaacagtag gtgcttagaa tcgagacaga accccaggcc cagcctgctg ccctggcctc	600
catgtgagca gcacctagaa cacagtcata gatctgccct gagcattcaa actgggctta	660
ttctgtgccg atgccatct tcccttgga accagctgtg ttactcattg caggtgtgcc	720
tcacgaccc aggtctcttc agagaaattg atgagctaataaaaaaggaa acgaaaggca	780
ggggttctct ggaagtgtc agtctgaagg acgtggagga aggcgatgag aagtttgaat	840
gacaccgccc ggcctctcaa ctggagcacg accgaggacg ctgttcttc acagcagcag	900
ctcgttctgt gacctgccaa acgccctgct cgcgcgacgt gccactttcc atcttgtgtt	960
aaacatttac ccaggtaacct ggggtatttt gtgtcaatt ggggtttcca gcaaaaatga	1020
aaaaataacct aaaatacaga gtccagaaca gctgctcact gctgcgtctg cttttctagt	1080
tccaggggac cagagacagc attggtggat aagaaggtag agttagtcca tgacagatca	1140
ttggagaggg gtctgaataa caaagggggg acgcctgctg gaaagaagat ggggtgtttc	1200
tgaataatga agtgacagta tgggtgtga gcatggagag aagagttcct gggctcctcc	1260
caatagattt ataatgacta gggagaattt gactttctaa ttttcaacca acatgctacc	1320
aaaactgact tagattattc ttgggaaaat atatacagtc atttaatact aattcttaaa	1380
ggtttataat atatgttagt atagttaaaa ttctatgtaa tcaataaaac ttatttttac	1440